

***Remarks***

This Amendment is in response to the Office Action dated **July 16, 2007**.

Claims 14-17 and 19-22 have been canceled without prejudice. These claims are drawn to a non-elected invention. Applicants reserve the right to prosecute these claims in a divisional application.

***Rejections***

***35 U.S.C. §103***

Claims 18 and 23-26 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Crocker (USPN 5843116) in view of Gore (USPN 3953566).

Applicants traverse the rejection.

Applicants independent claim 18 is directed to a method of forming a balloon including at least three layers wherein one of the steps includes providing first, second and third tubes, *the second tube formed of a tube made of a material selected from the group consisting of fluoropolymers and high density polyethylene.*

The Office Action states that:

Crocker appears to be silent to the second tube formed of a tube made of a material selected from the group consisting of fluoropolymers and high density polyethylene. However, Crocker clearly suggests cross-linked polyethylene (5:35-39), and it is the Examiner's position that crosslinking would produce a polyethylene having a "high density", as claimed.

Office Action, page 3, first full paragraph.

Applicants disagree.

In the last response, Applicants argued that the cross-linked polyethylene disclosed by Crocker et al. is different than high density polyethylene, and that cross-linked polyethylene is a

polyethylene that has been subsequently modified by linking its molecules in a manner which changes the material from a thermoplastic to a thermoset.

The Examiner states on page 5 that these arguments are not persuasive for the following reasons:

a) Applicants' position rests on the use of a relative term which is not differentiated in the specification by any material characteristics. Therefore, it is submitted that the reference provides a "high density" polyethylene, or that a high density polyethylene is produced as a result of crosslinking, and that the rejection based thereon is valid. It is submitted that it is not implicit that high density polyethylene is thermoplastic (or remains a thermoplastic material), as asserted by Applicants' arguments.. See, for example, USPN 3376238 to Gregorian, which teaches providing a commercially available polyethylene, and crosslinking, providing a crosslinked high density polyethylene (7:15-25, also see Example 1). Therefore, the asserted thermoplastic nature of the high density polyethylene, which does not appear to be supported by the specification and is not commensurate with the scope of the claim, is not sufficient to distinguish the claimed invention.

Office Action, pages 5-6, section 6.

Applicants disagree. The term "high density polyethylene" has particular meaning to a skilled person as a sub-group of *thermoplastic* polyethylene polymers. See attached MatWeb overview of high density polyethylene. Gregorian is not to the contrary. Gregorian starts with a thermoplastic polyethylene that is already high density polyethylene (0.96 g/cc). Gregorian then crosslinks and treats with acid to produce a different material namely "crosslinked, microporous, high density polyethylene." Any person of skill in the art recognizes that the crosslinked material is no longer the same as the material known in the art as "high density polyethylene."

Even more to the point of the rejection, it is clear from Gregorian taken with the Matweb Overview, that the "high density" characterization in Gregorian's Example 2 comes from the fact that the *starting material* is high density polyethylene, not because of the crosslinking. Consequently Gregorian provides no support for the incorrect assertion that Crocker's

polyethylene is high density because it is crosslinked. There is thus nothing in the record of this case that supports the Examiner's assertion that Crocker's polyethylene is "high density polyethylene."

Applicants submit that crosslinking is not an inherent characteristic of a polyethylene. Furthermore, applicants describe methods of making the balloons of the present application beginning on page 6, 4<sup>th</sup> full paragraph to page 8, 1st full paragraph. Nowhere is it disclosed that the polymer materials employed in these methods are crosslinked. Applicants silence as to crosslinking and the description in the present specification as to how the balloons are being formed are sufficient to convey to those of ordinary skill in the art that the high density polyethylene disclosed and claimed therein is the conventionally known thermoplastic material, not a thermoset material.

The Office Action asserts that "...in the alternative, Gore teaches a PTFE (a fluoropolymer) tubular product ... which would have been suitable for use in Crocker's method as the expansion limiting bands (Crocker, 5:28-30)."

Again, Applicants disagree.

Crocker et al. describe the expansion limiting bands 40, 44 disclosed therein, as being "nondistensible". See col. 5, lines 20-39. One way to provide the desired "expansion limiting characteristics" is to form the expansion limiting bands 40, 44 from nondistensible materials. One example is polyester. See col. 5, lines 32-36. Examples of other generally nondistensible materials given by Crocker et al. include "...nylon, polyamide, Kevlar fiber, cross-linked polyethylene, polyethylene terephthalate..." Polytetrafluoroethylene is not suggested by Crocker et al. as being a material that is nondistensible, and that would provide the desired expansion limiting characteristics to the expansion limiting bands 40, 44.

Gore discloses “a tetrafluoroethylene polymer in porous form which has an amorphous content exceeding about 5% and which has a micro-structure characterized by nodes interconnected by fibrils.” Gore, US 3,953,566, Abstract. There is no disclosure as to any expansion limiting characteristics of PTFE and Gore fails to describe the specific PTFE material employed therein as being either inelastic or nondistensible.

Crocker et al. provides no basis for selecting PTFE, and one of ordinary skill in the art would not be lead to conclude that the PTFE tube disclosed by Gore would indeed be a suitable substitute for the expansion limiting bands disclosed by Crocker et al.

Under *KSR*, one of ordinary skill in the art must be able to readily recognize a benefit of modifying the balloon disclosed by Crocker et al. with the porous PTFE material disclosed by Gore in order to render claim 18 obvious over this combination. If one of skill in the art cannot implement a predictable variation, or see the benefit of doing so, the combination does not preclude patentability under 35 U.S.C. §103(a). See *KSR International v. Teleflex Inc.*, U.S. Supreme Court No. 04-1350 (April 30, 2007). Applicants submit that the benefit in making this combination is not readily apparent, and that claim 18 is therefore not rendered obvious over Crocker et al. in view of Gore.

Independent claim 23 also recites, among other features, “...providing first, second and third tubes, the second tube formed of expanded PTFE....”

Claim 23 is not obvious over the combination of Crocker et al. and Gore for at least the reasons that claim 18 is not obvious over the combination of Crocker et al. and Gore. Crocker et al. fails to disclose PTFE as being an expansion limiting, nondistensible material as required for making the expansion limiting bands disclosed therein, and there is no apparent benefit to selecting the PTFE disclosed by Gore as a substitute for the nondistensible materials

disclosed by Crocker et al. for use in making the expansion limiting bands.

Claims 24-26 depend from claim 23 and are not obvious over this combination for at least the reasons that claims 18 and 23 are not obvious over this combination.

Applicants respectfully request withdrawal of the rejection of claims 18 and 23-26 under 35 U.S.C. §103(a) as being unpatentable over Crocker et al. (USPN 5843116) in view of Gore (USPN 3953566).

**CONCLUSION**

Claims 18 and 23-26 are pending in the application. Applicants have addressed each of the issues presented in the Office Action. Based on the foregoing, Applicants respectfully request reconsideration and an early allowance of the claims as presented. Should any issues remain, the attorney of record may be reached at (952)563-3011 to expedite prosecution of this application.

Respectfully submitted,

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**MatWeb, The Online Materials Database****Overview - High Density Polyethylene (HDPE), Extruded****Subcategory:** HDPE; Polyethylene; Polymer; Thermoplastic**Close Analogs:**

Click button for specific proprietary grades that belong to this Overview class.

Proprietary Grades
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Please be aware that some proprietary polymers may not be listed because they fall into more than one class or because of ambiguity in manufacturer's information.

**Key Words:** Plastics, Polymers

The property data has been taken from proprietary materials in the MatWeb database. Each property value reported is the average of appropriate MatWeb entries and the comments report the maximum, minimum, and number of data points used to calculate the value. The values are not necessarily typical of any specific grade, especially less common values and those that can be most affected by additives or processing methods.

Physical Properties	Metric	English	Comments
Density	0.936 - 0.962 g/cc	0.0338 - 0.0348 lb/in <sup>3</sup>	Average = 0.948 g/cc; Grade Count = 21
Apparent Bulk Density	0.58 - 0.61 g/cc	0.021 - 0.022 lb/in <sup>3</sup>	Average = 0.59 g/cc; Grade Count=4
Water Absorption	0.01 %	0.01 %	Grade Count = 1
Moisture Vapor Transmission	0.38 cc-mm/m <sup>2</sup> -24hr-atm	0.965 cc-mil/100 in <sup>2</sup> -24hr-atm	Grade Count = 1
Environmental Stress Crack Resistance	10 - 5000 hour	10 - 5000 hour	Average = 1600 hr; Grade Count = 16
Melt Flow	0.14 - 13 g/10 min	0.14 - 13 g/10 min	Average = 3.6 g/10 min; Grade Count = 21
<b>Mechanical Properties</b>			
Hardness, Shore D	58 - 65	58 - 65	Average = 62; Grade Count = 14
Tensile Strength, Ultimate	24 - 45 MPa	3480 - 6530 psi	Average = 30 MPa; Grade Count = 9

Tensile Strength, Yield	15 - 30 MPa	2180 - 4350 psi	Average = 21.9 MPa; Grade Count = 15
Elongation at Break	500 - 1000 %	500 - 1000 %	Average = 840%; Grade Count = 17
Tensile Modulus	0.8 - 0.99 GPa	116 - 144 ksi	Average = 0.86 GPa; Grade Count = 3
Flexural Modulus	0.5 - 1.52 GPa	72.5 - 220 ksi	Average = 0.928 GPa; Grade Count = 16
Izod Impact, Notched	0.8 - 7.5 J/cm	1.5 - 14.1 ft-lb/in	Average = 3.7 J/cm; Grade Count = 6
Tensile Impact Strength	320 - 480 kJ/m <sup>2</sup>	152 - 228 ft-lb/in <sup>2</sup>	Average = 380 kJ/m <sup>2</sup> ; Grade Count = 3
Coefficient of Friction	0.28	0.28	Grade Count=1

**Electrical Properties**

Electrical Resistivity	1e+017 ohm-cm	1e+017 ohm-cm	Grade Count = 2
Surface Resistance	1e+017 ohm	1e+017 ohm	Grade Count = 1
Dielectric Constant	2.3	2.3	Grade Count = 2
Dissipation Factor	0.0001 - 0.0005	0.0001 - 0.0005	Average = 0.0003; Grade Count = 2

**Thermal Properties**

CTE, linear 20°C	140 µm/m-°C	77.8 µin/in-°F	Grade Count=3
Melting Point	124 - 131 °C	255 - 268 °F	Average = 130°C; Grade Count = 9
Vicat Softening Point	108 - 129 °C	226 - 264 °F	Average = 120°C; Grade Count = 15

Brittleness Temperature	-100 - -70 °C	-148 - -94 °F	Average = -86.2°C; Grade Count=16
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**Processing Properties**

Processing Temperature	180 - 315 °C	356 - 599 °F	Average = 210°C; Grade Count = 17
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